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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/847,746

05/01/2001

Robert Bartola

257/267

6090

22249

7590

12/11/2003

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EXAMINER

DATSKOVSKIY, MICHAEL V

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,746

Applicant(s)

BARTOLA ET AL.

Examiner

Michael V Datskovskiy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 12-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the channel formed by a surface of a device (claims 19, 30 and 40) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 13, 19 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding to the claims 13, 19: Claims recite the limitation "the channel" in lines 1 and 2 respectively. There is insufficient antecedent basis for this limitation in the claim.

Regarding to the claim 35: Claim 35 recites the limitation "the loop" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 12-22, 24-33, 35-39, 40-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Little.

Little teaches an assembly, Figs.1-19, comprising: a heat generating device 19 or 94 (a chip or a transistor) attached to a multiplayer printed circuit board without a flange (device 19) or through a flange 71 (device 94), and a thermal management system comprising separate heat sink (inherently having an interior lumen) and a pump (condenser and compressor respectively, col.5, lines 40-46) arranged for circulating a coolant through a channel, and a coolant circulation channel loop 29, 31, wherein one part of the loop is formed in a layer of the PCB, and the coolant circulation channel loop is being in fluid and thermal communication with the heat sink (condenser) lumen, and wherein a portion of the coolant cooling channel is in a vicinity of a mounting area of said heat generating device 94. Little teaches furthermore said portion of the channel in the vicinity of the mounting area or the heat generating device is formed by a top surface of said circuit board (see Fig.16). Regarding to the claims 15, 16, 26, 27 and 37: Claims as claiming methods of making said PCB cooling channels (removing of portions of one or more layers – claims 15 and 26, or coinciding vias located in adjacent layers

of the PCB – claims 16, 27 and 37) has not been taken in the consideration, because it is well settled that the presence of process limitations in product claims, which product does not otherwise distinguish over the prior art, cannot impart patentability to that product. (In re Johnson, 157 USPQ 670, 1968). Regarding to the claims 17-18 and 28-29 and 38-39: Because the cooling system by Little is a refrigeration system including compressor, evaporator and condenser, examiner assumes that part of a cooling fluid is in a liquid form and part is evaporated to become a gas.

6. Claims 12-16, 18-19, 21-27, 29-37, 39-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Denney< Jr. et al.

Denney< Jr. et al teach an assembly 18, Figs.1-2, comprising: a plurality of heat generating devices 10 (chips or transistors) attached to a multiplayer printed circuit board, and a thermal management system comprising separate heat sink 53 (inherently having an interior lumen) and a pump 50 arranged for circulating a coolant through a coolant circulation channel loop 52, wherein one part of the loop is formed in a layer of the PCB, and the coolant circulation channel loop is being in fluid and thermal communication with the heat sink 53 lumen, and wherein a portion of the coolant cooling channel is in a vicinity of a mounting area of said heat generating device 10. Denney< Jr. et al teach furthermore said portion of the channel in the vicinity of the mounting area or the heat generating device is formed by a top surface of said circuit board and a bottom surface of said heat generating device 10. Regarding to the claims 15, 16, 26, 27 and 37: Claims as claiming methods of making said PCB cooling

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channels (removing of portions of one or more layers – claims 15 and 26, or coinciding vias located in adjacent layers of the PCB – claims 16, 27 and 37) has not been taken in the consideration, because it is well settled that the presence of process limitations in product claims, which product does not otherwise distinguish over the prior art, cannot impart patentability to that product. (In re Johnson, 157 USPQ 670, 1968).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Seibold et al (US Patent 5,142,441); O'Connor et al (US Patent 6,501,654); Hamilton et al (US Patent 5,841,244) and Beise (US Patent 5,761,035).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Datskovsky whose telephone number is (703) 306-4535. The examiner can normally be reached on Mn - Fry 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on (703) 308-4815. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Primary Examiner

Michael Datskovsky

A handwritten signature in black ink, appearing to read "Michael Datskovsky", written in a cursive style.

December 1, 2003